

**WHAT IS CLAIMED IS:**

1. An isolated nucleic acid comprising a member selected from the group consisting of:
  - (a) a polynucleotide having at least 70% sequence identity, as determined by the GAP algorithm under default parameters, to a polynucleotide selected from the group consisting of SEQ ID NOS: 25, 27 and 29;
  - (b) a polynucleotide encoding a polypeptide selected from the group consisting of SEQ ID NOS: 26, 28 and 30;
  - (c) a polynucleotide amplified from a *Zea mays* nucleic acid library using primers which selectively hybridize, under stringent hybridization conditions, to loci within a polynucleotide selected from the group consisting of SEQ ID NOS: 25, 27 and 29;
  - (d) a polynucleotide which selectively hybridizes, under stringent hybridization conditions and a wash in 0.1X SSC at 65°C, to a polynucleotide selected from the group consisting of SEQ ID NOS: 25, 27 and 29;
  - (e) a polynucleotide selected from the group consisting of SEQ ID NOS: 25, 27 and 29;
  - (f) a polynucleotide which is complementary to a polynucleotide of (a), (b), (c), (d), or (e); and
  - (g) a polynucleotide comprising at least 25 contiguous nucleotides from a polynucleotide of (a), (b), (d), (e), or (f).
2. A recombinant expression cassette, comprising a member of claim 1 operably linked, in sense or anti-sense orientation, to a promoter.
3. A host cell comprising the recombinant expression cassette of claim 2.
4. A transgenic plant comprising the recombinant expression cassette of claim 2.

5. The transgenic plant of claim 4, wherein said plant is a monocot.
6. The transgenic plant of claim 4, wherein said plant is a dicot.
7. The transgenic plant of claim 4, wherein said plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, millet, peanut, and cocoa.
8. A seed from the transgenic plant of claim 4.
9. A method of modulating the level of cellulose synthase in a plant cell, comprising:
  - (a) introducing into a plant cell a recombinant expression cassette comprising a polynucleotide of claim 1 operably linked to a promoter;
  - (b) culturing the plant cell under plant cell growing conditions; and
  - (c) expressing said polynucleotide for a time sufficient to modulate the level of cellulose synthase in said plant cell.
10. The method of claim 9, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, millet, peanut, and cocoa.
11. A method of modulating the level of cellulose synthase in a plant, comprising:
  - (a) introducing into a plant cell a recombinant expression cassette comprising a polynucleotide of claim 1 operably linked to a promoter;
  - (b) culturing the plant cell under plant cell growing conditions;
  - (c) regenerating a plant from said plant cell; and
  - (d) expressing said polynucleotide for a time sufficient to modulate the level of cellulose synthase in said plant.

12. The method of claim 11, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, millet, peanut, and cocoa.

13. An isolated protein comprising a member selected from the group consisting of:

- (a) a polypeptide of at least 20 contiguous amino acids from a polypeptide selected from the group consisting of SEQ ID NOS: 26, 28 and 30;
- (b) a polypeptide selected from the group consisting of SEQ ID NOS: 26, 28 and 30;
- (c) a polypeptide having at least 70% sequence identity to, and having at least one epitope in common with, a polypeptide selected from the group consisting of SEQ ID NOS: 26, 28 and 30, wherein said sequence identity is determined by the GAP algorithm under default parameters; and,
- (d) at least one polypeptide encoded by a member of claim 1.

14. A method of modifying expression of a cellulose synthase gene in a maize plant, comprising:

- (a) identifying, from a population of maize plants mutagenized with the *Mu* transposable element, those plants containing one or more *Mu* insertions within a polynucleotide of claim 1;
- (b) selecting those plants showing modified cellulose syse gene expression.

15. The method of claim 14, where expression of the cellulose synthase gene is down-regulated.